

CLAIMS

1. Gas turbine plant comprising a compressor (C), a turbine (T) and a reactor (1) for heating air, in which air is compressed in the compressor (C) and together with a fuel is delivered to the reactor in order to maintain combustion, and in which the air heated in the reactor drives the turbine (T), **characterised in that** control of the load of the turbine (T) consists of controlling the inlet temperature to the turbine (T) by mixing hot air from the reactor (1) with air from the compressor by means of a regulating valve (V) arranged between the outlet of the compressor (C) and the inlet of the gas turbine (T).
2. Gas turbine plant according to Claim 1, **characterised in that** the reactor (1) is an MCM reactor.
3. Gas turbine plant according to either of Claims 1 or 2, **characterised in that** the regulating valve (V) is fitted in a line which bypasses the air circuit of the reactor (1).
4. Gas turbine plant according to Claim 3, **characterised in that** the regulating valve is fitted closer to the cooler side of said bypass line.
5. Gas turbine plant according to any one of Claims 2 to 4, **characterised in that** the MCM reactor (1) comprises an air circuit which leads air from the compressor (C) along a first side of a membrane (M), which transports oxygen from the air to a hot gas on the other opposite side of the membrane and that as the air in the air circuit passes through the reactor it is heated by a heat exchanger (VVX) inside the reactor (1).
6. Gas turbine plant according to Claim 5, **characterised in that** the reactor (1) comprises a sweep circuit (5), which includes at least one burner (4) in which the fuel is burned and generates a hot gas in the sweep circuit, and that the hot gas is led through the reactor on the other side of said membrane (M), where it is enriched with oxygen and the hot gas in the sweep circuit gives off heat to the air in the heat exchanger (VVX) before the cooled gas is delivered to an outlet (6).
7. Gas turbine plant according to Claim 6, **characterised in that** the sweep circuit comprises a blow-off valve (7).

8. Gas turbine plant according to any one of Claims 5 to 7, **characterised in that** the air circuit comprises an air blow-off valve (8).
9. Gas turbine plant according to Claim 1, **characterised in that** the reactor (1) is kept at a temperature corresponding to the full load of the reactor.
10. Gas turbine plant according to Claim 9, **characterised in that** said temperature is maintained by controlling the flow of air and fuel through the reactor.
11. Method of controlling the load in a gas turbine plant, comprising the following steps:
- air is compressed in a compressor (C),
 - the compressed air is led through an air circuit in a reactor (1) which comprises an MCM membrane (M),
 - a fuel is delivered to a burner (4) in a sweep circuit (5) in the reactor (1) where a hot gas is formed by a combustion in the burner,
 - the hot gas is made to give off heat to the air in the air circuit via a heat exchanger in the reactor (1),
 - in the reactor (1) the hot gas is enriched with oxygen which is transported to the sweep circuit from the air in the air circuit via the membrane (M),
 - the air heated in the reactor (1) is led off to an inlet of a gas turbine (T) in order to drive the gas turbine, the method being **characterised in that:**
 - control of the load in the plant is achieved by controlling a regulating valve V, which allows air direct from the outlet of the compressor (C) to be mixed with hot air from the reactor (1), so that the temperature of the air to the inlet of the gas turbine (T) can be controlled as a function of the load uptake from the gas turbine (1).
12. Method according to Claim 11, **characterised in that** the regulating valve sets the temperature at the inlet to the gas turbine to between 450°C and 1250°C.
13. Method according to Claim 11 or 12, **characterised in that** the reactor (1) is allowed to operate at a temperature corresponding to full load when controlling load changes of the gas turbine (T).

14. Method according to Claim 11, **characterised in that** a rapid shutdown of the plant can be achieved by fully opening the regulating valve (V) so that virtually all the air from the compressor bypasses the reactor (1).
- 5 15. Method according to Claim 11, **characterised in that** a rapid shutdown of the gas turbine (T) can be achieved by fully opening the regulating valve (V) so that virtually all the air from the compressor bypasses the reactor (1).